

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 2

**IN THE CLAIMS:**

The following listing of claims replaces all prior versions and listings of claims in the present application:

**Listing of Claims:**

**Claim 1 (withdrawn):** An apparatus for producing carbonated water, comprising:

carbon dioxide gas supplying means;

water supplying means and/or water circulating means;

a first carbon dioxide gas dissolver connected to the carbon dioxide gas supplying means and the water supplying means and/or the water circulating means; and

a second carbon dioxide gas dissolver connected to a carbonated water discharging side of the carbon dioxide gas dissolver.

**Claim 2 (withdrawn):** The apparatus for producing carbonated water according to claim 1, wherein the carbon dioxide gas supplying means is connected to only the first carbon dioxide gas dissolver.

**Claim 3 (withdrawn):** The apparatus for producing carbonated water according to claim 1, wherein the first carbon dioxide gas dissolver includes a membrane module.

**Claim 4 (withdrawn):** The apparatus for producing carbonated water according to claim 3, wherein the membrane module includes a hollow fiber membrane.

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 3

**Claim 5 (withdrawn):** The apparatus for producing carbonated water according to claim 4, wherein the hollow fiber membrane is a three-layer composite hollow fiber membrane in which both faces of a thin non-porous gas permeation layer are sandwiched by porous layers.

**Claim 6 (withdrawn):** The apparatus for producing carbonated water according to any one of claim 1, wherein the second carbon dioxide gas dissolver includes a static mixer.

**Claim 7 (withdrawn):** The apparatus for producing carbonated water according to claim 6, wherein the static mixer is a stator type and/or a Kenics type.

**Claim 8 (withdrawn):** The apparatus for producing carbonated water according to claim 6, wherein a number of elements in the static mixer is 5 to 100.

**Claim 9 (withdrawn):** The apparatus for producing carbonated water according to claim 6, wherein an element diameter of the static mixer is 5 to 100 mm.

**Claim 10 (withdrawn):** The apparatus for producing carbonated water according to claim 1, wherein carbon dioxide gas flow rate control means is disposed in a downstream of the carbon dioxide gas supplying means and in an upstream of the first carbon dioxide gas dissolver.

**Claim 11 (withdrawn, previously presented):** The apparatus for producing carbonated water according to claim 1, wherein water flow rate control means is disposed in an upstream of the first carbon dioxide gas dissolver.

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 4

**Claim 12 (withdrawn):** The apparatus for producing carbonated water according to claim 1, wherein a pressure increasing pump is disposed in an upstream of the first carbon dioxide gas dissolver.

**Claim 13 (withdrawn):** The apparatus for producing carbonated water according to claim 12, wherein a start/stop flow switch of the pressure increasing pump is disposed in a line of the carbonated water producing apparatus, through which water or carbonated water passes.

**Claim 14 (withdrawn):** The apparatus for producing carbonated water according to claims 1, wherein a liquid-vapor separator for separating carbonated water and non-dissolved carbon dioxide gas is disposed in a downstream of the second carbon dioxide gas dissolver.

**Claim 15 (withdrawn):** The apparatus for producing carbonated water according to claim 14, wherein a bubble sensor is disposed in the downstream of the liquid-vapor separator.

**Claim 16 (withdrawn):** The apparatus for producing carbonated water according to claim 15, wherein the bubble sensor is of ultrasonic type.

**Claim 17 (withdrawn):** The apparatus for producing carbonated water according to claim 1, further comprising a carbon dioxide gas concentration sensor and/or an oxygen concentration sensor.

**Claim 18 (currently amended):** A method for producing carbonated water comprising steps of:

supplying water and carbon dioxide gas to a first carbon dioxide gas dissolver, including a first membrane module; and

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 5

supplying obtained carbonated water in the first carbon dioxide gas dissolver to a second carbon dioxide gas dissolver, including a static mixer, the second carbon dioxide gas dissolver being connected in line with said first carbon dioxide gas dissolver.

**Claim 19** (withdrawn): The method for producing carbonated water according to claim 18, wherein water is passed through the first carbon dioxide gas dissolver by single-pass.

**Claim 20** (original): The method for producing carbonated water according to claim 18, wherein water is circulated through the first carbon dioxide gas dissolver.

**Claim 21** (previously presented): The method for producing carbonated water according to claim 18, wherein carbon dioxide gas is supplied to only the first carbon dioxide gas dissolver.

**Claim 22** (previously presented): The method for producing carbonated water according to claim 18, wherein the first carbon dioxide gas dissolver includes a membrane module.

**Claim 23** (currently amended): The method for producing carbonated water according to claim [[22]] 18, wherein the membrane module contains a hollow fiber membrane.

**Claim 24** (original): The method for producing carbonated water according to claim 23, wherein the hollow fiber membrane is a three-layer composite hollow fiber membrane in which both faces of a thin non-porous gas permeation layer are sandwiched by porous layers.

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 6

**Claim 25 (cancelled)**

**Claim 26 (currently amended):** The method for producing carbonated water according to claim [[25]] **18**, wherein the static mixer is a stator type and/or a Kenics type.

**Claim 27 (currently amended):** The method for producing carbonated water according to claim [[25]] **18**, wherein a number of elements in the static mixer is 5 to 100.

**Claim 28 (currently amended):** The method for producing carbonated water according to claim [[25]] **18**, wherein an element diameter of the static mixer is 5 to 100 mm.

**Claim 29 (previously presented):** The method for producing carbonated water according to claim **18**, wherein carbon dioxide gas is supplied to the first carbon dioxide gas dissolver at a constant flow rate.

**Claim 30 (previously presented):** The method for producing carbonated water according to claim **18**, wherein water is supplied to the first carbon dioxide gas dissolver at a constant flow rate.

**Claim 31 (previously presented):** The method for producing carbonated water according to claim **18**, wherein a pressure increasing pump is disposed in an upstream of the first carbon dioxide gas dissolver and water pressurized by the pressure increasing pump is supplied to the first carbon dioxide gas dissolver.

**Claim 32 (original):** The method for producing carbonated water according to claim **31**, wherein a flow switch is disposed in a line, through which water or

Application Serial No. 10/520,516  
Docket No. 7390/84218  
Page 7

carbonated water passes, and the pressure increasing pump is driven only when water or carbonated water exists in the line.

**Claim 33** (previously presented): The method for producing carbonated water according to claim 18, wherein said method includes setting the temperature of generated carbonated water in a range of 30 to 45°C.

**Claim 34** (previously presented): The method for producing carbonated water according to claims 18, wherein said method includes setting the concentration of free carbon dioxide in the generated carbonated water is in a range of 800 to 1500 mg/L.